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Article

The Coping with Cyberbullying Questionnaire: Development of a New Measure

Fabio Sticca [1,*], Katja Machmutow [2], Ariane Stauber [3], Sonja Perren [1], Benedetta Emanuela Palladino [4], Annalaura Nocentini [4], Ersilia Menesini [4], Lucie Corcoran [5] and Conor Mc Guckin [6]

1 Department of Empirical Educational Research, University of Konstanz/Thurgau University of Teacher Education, Bärenstrasse 38, CH-8280 Kreuzlingen, Switzerland; E-Mail: sonja.perren@uni-konstanz.de

2 Department of Psychology, University of Zurich, Binzmühlestrasse 14, CH-8050 Zürich, Switzerland; E-Mail: k.machmutow@psychologie.uzh.ch

3 Department of Psychology, Swiss Distance University, Überlandstrasse 12, CH-3900 Brig, Switzerland; E-Mail: ariane.stauber@fernuni.ch

4 Department of Educational Sciences and Psychology, University of Florence, Via di S. Salvi, 12, Complesso di S. Salvi, Padiglione 26, 50135 Firenze, Italy; E-Mails: benedetta_palladino@yahoo.it (B.E.P.); annalaura.nocentini@virgilio.it (A.N.); ersilia.menesini@unifi.it (E.M.)

5 School of Arts, Dublin Business School, Dublin 2, Ireland; E-Mail: lucie.corcoran@dbs.ie

6 School of Education, Trinity College Dublin, Dublin 2, Ireland; E-Mail: conor.mcguckin@tcd.ie

* Author to whom correspondence should be addressed; E-Mail: fabio.sticca@phtg.ch; Tel.: +41-71-678-57-45.

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construct validity over a total of five questionnaire development stages. The CWCBQ was developed in the context of a longitudinal study carried out in Switzerland and was also used with Italian and Irish samples of adolescents. The results of these different studies and stages resulted in a questionnaire that is composed of seven subscales (*i.e.*, distal advice, assertiveness, helplessness/self-blame, active ignoring, retaliation, close support and technical coping) with a total of 36 items. The CWCBQ is still being developed, but the results obtained so far suggested that the questionnaire was reliable and valid among the countries where it was used at different stages of its development. The CWCBQ is a promising tool for the understanding of potential coping with experiences of cyber victimization and for the development of prevention and intervention programs.

Keywords: cyberbullying; cyber victimization; coping; reliability; validity

1. Introduction

Cyberbullying can be defined as an intentional aggressive behaviour that is performed by a person or group of persons using electronic forms of communication repeatedly and over time against a victim who cannot easily defend himself or herself [1]. Over the last few decades, the phenomenon of cyberbullying has become a major issue in many countries. Modecki, Minchin, Harbaugh, Guerra and Runions [2] reviewed and conducted a meta-analysis of a total of 80 studies on traditional bullying and cyberbullying, finding that the prevalence of cyber victimization (*i.e.*, suffering cyberbullying) is as high as 15%.

Given the often severe nature of cyberbullying, it is not surprising that experiencing it as a victim might lead to a number of undesirable outcomes. Indeed, research on cyber victimization has shown that cyber victims report increased depressive and psychosomatic symptoms [3–5], anxiety [6], lower levels of self-esteem [3,7,8], emotional distress, anger and sadness [5,9,10], social difficulties [11], academic problems and school absenteeism [8,12], suspensions from school and weapon carrying at school [13], deterioration of home life [9], substance use [14] and suicidal ideation [15]. In short, cyber victimization can potentially have negative effects on the victim's well-being, in particular if combined with other sources of stress, such as traditional victimization [16].

The list of potential negative outcomes of cyber victimization shows how distressing these experiences can be. However, not all cyber victims report undesirable outcomes that result from their cyber victimization experience [17–19]. Besides the variability in the nature, frequency and seriousness of the bullying experience [20–22], the use and the effectiveness of coping strategies might be one reason for these inter-individual differences in the effects of cyberbullying on well-being [18,19]. Coping can be defined as the effort to manage stress and related emotions and is crucial for the sustainment of emotional and psychological well-being in the case of adversity [23]. Two kinds of strategies with different main functions of coping are differentiated: problem-focused coping strategies, which are directed at managing the problem causing the distress, and emotion-focused coping strategies, which are directed at regulating the emotional response to the problem [24]. Problem-focused and emotion-focused coping should not be seen as two isolated types of coping,

because in most cases of stress situations, they complement each other [23]. Individuals tend to use problem-focused coping when it is possible to exert control over the stressful situation and with enough resources. In contrast, they use emotion-focused coping when they think that they have limited resources and that they can do little to change the situation [24].

Perren *et al.* [25] reviewed a total of 36 studies on cyberbullying prevention strategies. The authors proposed three domains of responses to cyberbullying: reducing risks, combating cyberbullying and buffering the negative impact. Strategies for reducing risks included traditional anti-bullying programs and their various components that were found to be effective. Moreover, this included specific Internet safety strategies (e.g., not giving away passwords or using different ones) and parental mediation of children's and youth's online activities (e.g., accompanying them online, talking to them about their Internet experience). Combating cyberbullying encompasses coping strategies that can be used when experiencing cyberbullying. These can be divided into technical solutions (e.g., blocking), confronting the cyberbully (e.g., constructive discussion or revenge), active ignoring (e.g., pretend that nothing happened, forgetting about it) and instrumental support (e.g., asking peers, parent or teachers for help). Lastly, buffering the negative impact includes emotional support from peers, parents and teachers and emotional coping, such as self-blame (maladaptive) and perpetrator blame (adaptive) [25].

Although Livingstone, Haddon, Görzig and Olaffson [26] concluded that children's coping strategies can be expected to be effective, Perren *et al.* [25] conclude their overview by stating that there is very little empirical evidence on the effectiveness of coping strategies in the context of cyberbullying and that research in this field is at its very beginning. The effectiveness of coping strategies is important, because the use of particular forms of coping seems to be strongly related to the emotional well-being of an individual [23]. Although it is important not to value a specific form of coping without reference to the context in which it is disposed, findings of empirical studies lead to the assumption that a problem-focused coping is often more adaptive than an emotion-focused coping [27]. Whereas problem-focused coping strategies are associated with positive affect and increased emotional regulation, emotional-focused coping strategies seem to be related with emotions of distress [28,29].

Consistent with this pattern, research on traditional victimization found that experiences of victimization were associated with less use of problem-focused coping strategies and with more psychological distress [30]. Therefore, victims are probably more likely to evaluate bullying as less changeable than non-victims. Furthermore, in the context of cyberbullying, victims seem to use emotion-focused coping strategies, like emotional expression, depressive coping and avoidance in daily life, more than other adolescents [31]. In the investigation of Völlink, Bolman, Eppingbroek and Dehue [32], only emotion-focused cyber-specific coping was associated with increased depressive feelings and other health complaints among cyber victims. This leads us to question if there are other, more effective coping strategies that may even buffer the negative short- and long-term consequences of cyber victimization on adolescents' mental health. The first longitudinal study of Machmutow *et al.* [18] showed that in contrast to helpless reactions and assertive coping, both of which were positively associated with depressive symptoms, seeking support from peers and family showed a significant buffering effect: cyber victims who were recommended to seek close support as a coping strategy showed lower levels of depressive symptoms over time. However, in the study by Völlink *et al.* [32], the buffering effect of problem-focused coping, measured with items about confronting coping and

social support coping, was not confirmed. In sum, our knowledge about effective coping with cyberbullying is very limited [25].

As the issue of cyberbullying has emerged during the last two decades, research on coping with cyberbullying is as young as research on cyberbullying and as the phenomenon of cyberbullying itself. Examining how adolescents cope with experiences of cyber victimization and exploring which coping strategies are positively related to well-being (or negatively to undesirable outcomes) would yield important knowledge on how coping strategies mediate or moderate the association between experiences of cyber victimization and well-being and, lastly, on how to reduce the negative impact of cyber victimization. This knowledge would help teachers, parents, practitioners and cyber victims to cope with the negative experiences and to reduce the negative impact of bullying. One necessary condition for following this aim is the availability of a valid and reliable instrument for the assessment of coping strategies in relation to adolescents' experiences of cyber-victimization. To the best of our knowledge, no such instrument exists to date. For that reason, the aim of the present study was to develop a new instrument: the Coping with Cyberbullying Questionnaire (CWCBQ). The CWCBQ was developed in the context of a Swiss longitudinal study of cyberbullying in adolescence (netTEEN: "Wie nett sind Teens im Internet"; [18,21,22,33,34]). The entire process of the development of the CWCBQ is described in this paper, including qualitative pilot studies and assessments of its validity and reliability using data that were collected in Switzerland, Italy and Ireland.

2. Development of the Coping with Cyberbullying Questionnaire

The CWCBQ was developed to examine how adolescents would cope with hypothetical experiences of cyberbullying. The questionnaire underwent a total of five development stages. These stages are described hereunder.

Stage 1: In the context of an online pilot study that was carried out in late 2010, 127 German-speaking students were given a definition of cyberbullying and were asked a number of open-ended questions about their personal experience with cyber victimization. The questions were divided into four blocks: (1) "Have you ever suffered cyberbullying or did you ever witness how one of your friends suffered cyberbullying? How did you or your friend react to that?" (2) "In case you never experienced or witnessed cyberbullying, how would you react if someone bullied you through the Internet, emails or mobile phones?" (3) "What kind of behaviour do you think would help when experiencing cyberbullying?" (4) "What kind of reaction would worsen the situation?" Based on theoretical considerations [35–37], content analyses of the students' answers were conducted by one research assistant and yielded five coping dimensions: reactions toward the bully, ignoring, support, emotion-focussed reactions and technical solutions. These results marked the starting point for the development process of the quantitative questionnaire that is described in the following.

Stage 2: Based on these results from the qualitative pilot study, the first version of a quantitative coping questionnaire was developed. The coping questionnaire encompassed four subscales with a total of 14 items developed. The wording of the 14 items was based on the open-ended responses of the students that were gained in the pilot study and were simplified and modified to fit the format of the coping questionnaire (*i.e.*, "I would…"). Further, a total of 32 different hypothetical cyberbullying scenarios were developed. These scenarios were systematically manipulated with respect to the

severity and the publicity of the cyberbullying experience, as well as with respect to the gender of the hypothetical victim and acceptance in his or her peer group. This manipulation was used because it was assumed that both the use and the perceived success of a specific coping strategy depend on several characteristics of the cyberbullying experience at hand. These scenarios were then used during the second wave of data assessment in the longitudinal netTEEN-study carried out in Switzerland in May 2011. The coping questionnaire was distributed to students that managed to complete the other scales that were included in the netTEEN study [18,21,22,33,34] within time at their disposal (*i.e.*, 45 or 60 minutes depending on the school) and still had enough time left over to complete the coping questionnaire. A total of 765 students completed one of these coping questionnaires with a randomly-assigned scenario. Students were asked to imagine that they experienced something similar to what was described in the respective scenario and to rate how likely they were to use each of the 14 coping strategies on a scale ranging from one (definitely not) to four (definitely). The results of an exploratory factor analysis suggested that five subscales were present within the 14 items. These five subscales were in line with our expectations and were interpreted as: (1) distal advice; (2) close support; (3) assertiveness; (4) helplessness; and (5) retaliation [18]. All subscales were composed of three items, except retaliation, which was composed of a single item. One item had to be eliminated from the questionnaire, as the factor analysis indicated that the students had understood it ambiguously (*i.e.*, strong cross-loadings). However, the reliabilities of the five dimensions of the coping questionnaire that resulted from Stage 2 were not considered satisfactory, and the number of items was considered to be too low for the retaliation subscale. Therefore, a further stage of the questionnaire development process was initiated.

Stage 3: Results from Stage 2 were used as a starting point for a revision of the questionnaire. The questionnaire was revised based on theoretical considerations [36,38] and on students' open-ended answers obtained in Stage 1. The result of this revision was a questionnaire with a total of six subscales of three items each: (1) distal advice; (2) close support; (3) retaliation; (4) assertiveness; (5) active ignoring; and (6) helplessness/self-blame. Further, just one (Switzerland and Italy) or two (Ireland) cyberbullying scenarios were chosen (as opposed to the 32 scenarios that were used in Stage 2). The scenario that was used in both Switzerland and Italy was the following: "Sometimes, the Internet or mobiles are used to bully others. Imagine that for a few weeks, you have been receiving nasty and threatening text messages. Aside from that, you found out that embarrassing pictures of you are being spread around". In Ireland, two different hypothetical scenarios of varying severity were developed. The wording of the scenarios was "Imagine that for the last few days, you frequently received text messages telling you that everyone in school thinks that you are a total loser" and "Imagine that yesterday, a friend told you that he or she saw a YouTube video of you from the last school trip. In this video, you are seen in an embarrassing state of undress for several minutes while changing your clothes". The purpose of this approach was to allow for the examination of coping preferences in different contexts. Although there is cyber-based victimization in both scenarios, the second scenario is exposing the individual to more public victimization and is also thought to be a more severe form of victimization, as it involves a video of the targeted person in a state of undress. In order to maximise the comparability between scenarios, we decided to use only data based on the first scenario for the analyses carried out at this step. As in previous versions of the questionnaire, students were asked to rate how likely they were to use each of the 18 coping strategies on a scale ranging from one (definitely not) to

four (definitely). This version of the questionnaire was named the Coping with Cyberbullying Questionnaire (CWCBQ) and was used during the third assessment of the netTEEN study (November 2011). As the netTEEN study was carried out both in the German-speaking and the Italian-speaking part of Switzerland, the questionnaire was translated from its original German version to an Italian version. Further, the questionnaire was also translated from the German version to an English version to be used in Ireland. The translations were made by a total of six independent bilingual translators. Three of them worked on the Italian translation, and three worked on the English translation. The Italian version of the CWCBQ was also used in a study carried out in Italy [39], while the English version was used in a study carried out in Ireland [40]. In sum, the CWCBQ was used in Switzerland (N = 803), Italy (N = 755) and Ireland (N = 2412). While in Stage 2, the questionnaire was only distributed to those students that managed to complete the other scales, in Stage 3, the CWCBQ was distributed to all students. Note that the 803 students that participated in Stage 3 in Switzerland mostly also participated in Stage 2, as all assessments that were carried out in Switzerland were part of the longitudinal netTEEN study [18,21,22,33,34]. Given this unique opportunity resulting from a rich database, we examined the construct validity on the CWCBQ and tested it towards measurement invariance among the three countries.

Testing measurement invariance: Measurement invariance is a prerequisite for comparisons between different groups, such as different nations; only if measurement invariance is given can we be sure that, "under different conditions of observing and studying phenomena, measurement operations yield measures of the same attribute" [41]. Jöreskog [42] described multi-group confirmatory factor analysis (MGCFA) as a method to simultaneously perform factor analyses with different samples, and Steenkamp and Baumgartner [43] proposed a unified and sequential way to test for metric invariance among them. The authors outlined a testing strategy with increasingly restrictive levels of invariance. The less restrictive level is called configural invariance, followed by metric invariance and, finally, scalar invariance. Configural invariance means that the constructs are represented by the indicators among countries and is given when three conditions are met: (1) the same configuration of loadings and latent factors must be present (including cross-loadings); (2) all factor loadings must be both substantial and significant; and (3) the correlations among the latent factors must be lower than one (discriminant validity). Metric invariance means that the representation of the constructs is invariant across countries and is given when the factor loadings between indicators and latent constructs are invariant among countries. Finally, scalar invariance means that differences in the means of the indicators among countries are due to differences in the means of the latent constructs and is given when the intercepts of the indicators are invariant across countries.

Configural invariance: In the first step, we tested data from the three countries towards configural invariance. Thus, we modelled an MGCFA with three groups (Switzerland, Ireland, Italy). Following our theoretical model, for each group, we modelled an *a priori* CFA with six latent factors (*i.e.*, distal advice, close support, retaliation, assertiveness, active ignoring and helplessness/self-blame) represented by three indicators each. This model was not found to fit the data well (χ^2 = 2488.675; degrees of freedom (df) = 360; Comparative Fit Index (CFI) = 0.867; Root Mean Square Error of Approximation (RMSEA) = 0.067; Standardized Root Mean Square Residual (SRMR) = 0.072). Modification indices showed that the item "I would encourage my peers (e.g., my group of friends) to exclude the bully" from the retaliation subscale showed strong cross-loadings on a number of other latent factors, with

particularly strong cross-loadings on assertiveness and close support in the Swiss sample. Given that the pattern of these cross-loadings was not in line with theoretical assumptions and that the cross-loadings were mainly found in the Swiss subsample, we decided to delete this item and to run the MGCFA without it. This adapted model was not found to fit the data well (χ^2 = 2128.580; df = 312; CFI = 0.878; RMSEA = 0.066; SRMR = 0.066). Modification indices showed that the item "I would take technical precautions (e.g., make my password more secure, change my mobile phone number and/or email address, *etc.*)" from the assertiveness subscale exhibited very strong cross-loadings on a number of other latent factors, with particularly strong cross-loadings on distal advice and close support in the Irish sample. Again, given that the pattern of these cross-loadings was not in line with theoretical assumptions and that the cross-loadings were mainly found in the Irish subsample, we decided to delete this item and to run the MGCFA without it. The resulting model was not found to fit the data well (χ^2 = 1645.204; df = 269; CFI = 0.903; RMSEA = 0.062; SRMR = 0.054). Modification indices showed that the item "I would avoid any further contact with the bully" from the active ignoring subscale exhibited very strong cross-loadings on a number of other latent factors, with particularly strong cross-loadings on retaliation, distal advice and close support in the Italian sample. Again, given that the pattern of these cross-loadings was not in line with theoretical assumptions and that the cross-loadings were mainly found in the Italian subsample, we decided to delete this item and to run the MGCFA without it. The resulting model showed a satisfactory fit to the data (see Table 1). All loadings were found to be significant and higher than 0.40, with most of them being higher than 0.60. Correlations between latent factors were found to be between −0.40 and 0.68. Thus, discriminant validity was also found among the subscales. Accordingly, all criteria for configural invariance among the three countries were met.

Table 1. Model fit indices for the three levels of measurement invariance (N = 3970).

Model	χ^2	df	CFI	RMSEA	SRMR
Configural	1181.946	225	0.926	0.048	0.048
Metric [1]	1220.372	243	0.925	0.055	0.051
Partial scalar [2]	1307.943	255	0.919	0.056	0.051

Notes: [1] Factor loadings equal among countries; [2] item intercepts partially equal among countries.

Metric invariance: In the second step, data from the three countries was tested towards metric invariance. All factor loadings were constrained to be equal among countries. The resulting model showed a satisfactory fit to the data (see Table 1). Given the large sample size of the present study, it was to be expected that the scaled chi-square test would indicate a significant deterioration in model fit as a consequence of the metric invariance constraints. However, simulation studies showed that with large sample sizes, the change in CFI might be a better indicator for model fit deterioration than the change in chi-square, as chi-square tests are notoriously affected by sample size [44]. The difference in CFI was found to be −0.001, which is ten-times smaller than the recommended threshold of −0.01 for accepting the null hypothesis of invariance [44]. Thus, it seemed eligible to conclude that metric invariance was given.

Scalar invariance: In the third and last step, data from the three countries was tested towards scalar invariance. All item intercepts were constrained to be equal among countries. The resulting

model was not found to fit the data well (χ^2 = 1959.248; df = 261; CFI = 0.869; RMSEA = 0.070; SRMR = 0.072), which means that scalar invariance is not given for all latent constructs and countries. Modification indices were used to examine which item intercepts would have to be released to achieve a satisfactory model fit. Results indicated that the item "I would go to the police" from the distal advice subscale, the item "I would accept the situation as it is because there is nothing you can do to stop bullying" from the helplessness/self-blame subscale and the item "I would ignore all messages/pictures so that the bully would lose interest" from the active ignoring subscale were not found to have an invariant item intercept. These three item intercepts were then progressively released to reach partial scalar invariance. The resulting model showed a satisfactory fit to the data, and the reduction in CFI was found to be as small as −0.006. Table 2 lists the standardized factor loadings and the unstandardized item intercepts for each item and for each country. Descriptive statistics and reliabilities of the latent constructs can be found in Table 3. Correlations between the latent factors are listed in Table 4. Thus, although no full scalar invariance was found, partial scalar invariance was found.

Stage 4: Results from Stage 3 were satisfactory in that configural, metric and partial scalar invariance were found for 15 out of the 18 items, which, for instance, permits mean comparisons across the three countries for all six subscales [45]. However, three of the six subscales were left with only two items, which means that the respective latent factors would be under-identified in further analyses. Ideally, a latent factor should be just identified, which is the case when there are three indicators for each latent factor [46,47]. With this goal in mind and given the results from Stage 3, the CWCBQ was revised again, based on theoretical considerations and open-ended answers from Step 1. Those items that were excluded from the analyses in Stage 3 were nonetheless carried forward into this next stage of questionnaire development to make a replication of the results from Stage 3 potentially possible. The result of this revision was that all six subscales were composed of five items. Additionally, a seventh subscale of four items tapping into technical coping strategies was developed. Therefore, the revised version of the CWCBQ encompassed seven subscales with a total of 34 items. At this stage, the format of the CWCBQ was the same one as in Stage 3 (*i.e.*, only one scenario). Again, an Italian version of the CWCBQ was developed based on the German original version following the same translation procedure as described in Stage 3. This revised version of the CWCBQ was used in a follow-up study carried out among the Italian sample in mid-2012 [39]. In total, 358 students completed this version of the CWCBQ. Results of a CFA showed that the *a priori* model with the seven subscales did not fit the data well (χ^2 = 995.178; df = 506; CFI = 0.835; RMSEA = 0.052; SRMR = 0.087). Modification indices indicated that a total of 10 items showed a pattern of cross-loadings that was not in line with theoretical expectations (one item each from the distal advice, assertiveness, retaliation, close support and technical coping subscales, two items from the helplessness/self-blame subscale and three items from the active ignoring subscale) and/or had loadings that were below 0.50. Therefore, these items were deleted, and the CFA was performed again without these items. Results of the CFA with seven subscales and 24 items showed that the model fit the data very well (χ^2 = 345.055; df = 231; CFI = 0.948; RMSEA = 0.037; SRMR = 0.051). Thus, the construct validity and the divergent validity of the questionnaire were found for the version of the CWCBQ presented in Table 5. Table 5 lists the standardized factor loadings and the unstandardized item intercepts for each item. Descriptive statistics

and reliabilities of the latent constructs can be found in Table 3. Correlations between the latent factors are listed in Table 4.

Stage 5: Results from stage 4 were satisfactory in that the structure of the questionnaire was validated among the Italian sample. However, 10 items had to be deleted, which indicated that there is a core of items that seemed to have good psychometric properties (both in stage 3 and stage 4), while others were problematic. As a result, the number of items was relatively low in the different subscales. Therefore, the questionnaire was revised again based on results from stage 4, theoretical considerations and open-ended answers from step 1. In particular, the wordings of the items were streamlined (e.g., all references to "that person" were substituted by "the bully") and some items were reformulated with the aim to make them more coherent. Further, the aim was to have at least five items in every subscale. This revision resulted in all seven subscales having five items, except for technical coping, which was composed of six items. Therefore, the revised version of the CWCBQ encompassed seven subscales with a total of 36 items. The format of the CWCBQ was the same one as in stage 3 and 4 (*i.e.*, only one scenario, see Appendixes. A German, Italian, and an English version of the CWCBQ were developed following the same translation procedure as described in stage 3. A complete version of the English, German, and Italian CWCBQ can be found in the appendices. This current version of the questionnaire represents an attempt to further improve the psychometric properties of the CWCBQ. To the best of our knowledge, this questionnaire has not been tested towards construct validity so far.

Table 2. Standardized factor loadings and unstandardized item intercepts for each country (based on the partial scalar invariance model of Stage 3, $N = 3970$).

Subscales and Items	**Standardized Factor Loadings**			**Unstandardized Item Intercepts**		
I would…	CH	ITA	IRL	CH	ITA	IRL
Distal advice						
...go to the police *	0.615	0.504	0.692	2.085 *	2.794 *	1.724 *
...seek professional advice	0.778	0.705	0.755	2.184	2.184	2.184
...inform a teacher or the principal	0.741	0.708	0.691	2.695	2.695	2.695
Assertiveness						
...ask the bully why he/she is doing this	0.750	0.642	0.746	2.992	2.992	2.992
...tell the bully to stop it	0.800	0.754	0.847	3.292	3.292	3.292
Helplessness/self-blame						
...think that it is my fault	0.690	0.606	0.680	1.352	1.352	1.352
...not know what to do	0.646	0.464	0.677	1.766	1.766	1.766
...accept the situation as it is because there is nothing you can do to stop bullying *	0.558	0.484	0.621	1.502 *	1.342 *	1.221 *
Active ignoring						
...ignore all messages/pictures so that the bully would lose interest *	0.730	0.692	0.771	2.265 *	2.719 *	2.177 *
...pretend that it does not bother me at all	0.651	0.625	0.627	2.101	2.101	2.101
Retaliation						
...write mean and threatening things to the bully	0.711	0.689	0.775	2.055	2.055	2.055
...get back at him/her personally	0.895	0.827	0.924	2.423	2.423	2.423
Close support						
...go to someone who accepts me the way I am	0.764	0.610	0.757	2.887	2.887	2.887
...spend time with my friends to take my mind off it	0.714	0.625	0.747	3.048	3.048	3.048
...go to someone who listens to me and comforts me	0.769	0.651	0.741	2.796	2.796	2.796

Notes: * = Item intercept not invariant among the three countries; CH = Switzerland; ITA = Italy; IRL = Ireland.

Table 3. Descriptive statistics and reliabilities (Cronbach's alpha) of the subscales of the Coping with Cyberbullying Questionnaire (CWCBQ) at Stage 3 ($N = 3970$) and Stage 4 ($N = 358$).

Subscales	Switzerland (Stage 3)			Italy (Stage 3)			Ireland (Stage 3)			Italy (Stage 4)		
	M	**SD**	**α**	**M**	**SD**	**α**	**M**	**SD**	**α**	**M**	**SD**	**α**
Distal advice	1.86	0.70	0.75	2.79	0.65	0.69	1.48	0.44	0.73	2.96	0.68	0.77
Assertiveness	2.68	0.82	0.72	2.99	0.73	0.65	2.84	0.70	0.81	3.04	0.74	0.79
Helplessness/self-blame	1.59	0.62	0.62	1.34	0.32	0.52	1.78	0.63	0.72	2.53	0.79	0.66
Active ignoring	2.73	0.78	0.64	2.72	1.06	0.60	3.15	0.71	0.62	3.11	0.93	0.63
Retaliation	1.95	0.80	0.80	2.04	0.73	0.72	1.86	0.79	0.82	2.17	0.93	0.78
Close support	3.15	0.81	0.76	2.78	0.68	0.70	3.33	0.59	0.79	3.12	0.60	0.77
Technical coping [1]										3.46	0.53	0.68

Notes: [1] Included only at Stage 4; M = mean; SD = standard deviation; α = Cronbach's alpha.

Table 4. Correlations between the subscales of the CWCBQ at Stage 3 ($N = 3970$; below the diagonal) and Stage 4 ($N = 358$; above the diagonal).

Subscales	1	2	3	4	5	6	7
1 Distal advice	1	0.39 ***	0.60 ***	0.55 ***	−0.37 ***	0.67 ***	0.62 ***
2 Assertiveness	0.35 ***	1	0.21 *	0.12	0.17 *	0.54 ***	0.54 ***
3 Helplessness/self-blame	−0.01	−0.13 ***	1	0.61 ***	−0.36 ***	0.68 ***	0.60 ***
4 Active ignoring	−0.01	0.17 ***	0.34 ***	1	−0.52 ***	0.55 ***	0.53 ***
5 Retaliation	−0.17 ***	0.15 ***	−0.09 ***	−0.08 **	1	−0.33 ***	−0.26 ***
6 Close support	0.29 ***	0.42 ***	0.21 ***	0.58 ***	−0.17 ***	1	0.69 ***
7 Technical coping [1]							1

Notes: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; [1] included only at Stage 4.

Table 5. Standardized factor loadings and unstandardized item intercepts for the Italian sample (based on the data from Stage 4; $N = 358$).

I would…	Loadings	Intercepts
Distal advice		
...go to the police	0.613	2.957
...inform a teacher or the principal	0.711	2.673
...seek professional advice	0.647	2.392
...call a helpline	0.630	2.197
Assertiveness		
...let the bully know that I do not find it funny at all	0.786	3.038
...let the bully know that his behaviour is not acceptable at all	0.687	3.215
...tell the bully to stop it	0.610	3.337
...ask the bully why he/she is doing this	0.732	2.933
Helplessness/self-blame		
...be completely desperate	0.705	2.528
...ask myself why this happened to me	0.709	2.948
...not know what to do	0.523	2.180
Active ignoring		
...get around that person	0.866	3.113
...avoid any further contact with the bully	0.805	2.874
Retaliation		
...get back at him in the real world	0.843	2.169
...get back at him in the virtual world (online, e.g., SMS/email)	0.586	1.727
...write mean and threatening things to the bully	0.639	1.978
...get back at him/her personally	0.897	2.215
Close support		
...talk to my friends because it's good for me	0.664	3.120
...go to someone who listens to me and comforts me	0.759	3.111
...spend time with my friends to take my mind off it	0.668	3.316
...go to someone who accepts me the way I am	0.604	3.142
Technical coping		
...pay more attention to who gets access to my data	0.650	3.457
...block that person so that s/he cannot contact me anymore	0.646	3.336
...put less information on the Internet	0.658	3.095

Note: These items were exclusively used in Italy. The translation into English was done for the purpose of this publication only.

3. Discussion

The aim of the present study was to describe the entire process of the development of the CWCBQ in a transparent way, including a qualitative pilot study and assessments of its validity and reliability using data that were collected in Switzerland, Italy and Ireland and during different progressive stages of questionnaire development. The CWCBQ went through a total of five stages of development. In the first stage, open-ended responses from a qualitative pilot study were used to develop a first version of the questionnaire with six subscales and 14 items. In Stage 2, this questionnaire was used in the second wave of data collection of the longitudinal netTEEN study and was revised and expanded to six subscales with 18 items. The revised version was used in the third wave of the netTEEN study and, after a translation into English and Italian, was also used in two studies carried out in Ireland and Italy. The data that were collected in the three countries were used to examine the construct validity of the questionnaire among the three countries. Configural, metric and partial scalar invariance were found after deleting three out of 18 items. However, some items were found to be problematic. In Stage 4, the questionnaire was revised and extended to seven subscales and a total of 34 items, and it was used in a follow-up assessment among the Italian sample. Herein, a large proportion of the items was found to have good psychometric properties, but others were not found to be satisfactory and were revised for the current version of the CWCBQ. The current version of the CWCBQ encompasses a total of seven subscales (*i.e.*, distal advice, assertiveness, helplessness/self-blame, active ignoring, retaliation, close support and technical coping) with a total of 36 items.

In sum, the development of the CWCBQ was initiated by taking a qualitative approach and an inductive strategy (*i.e.*, content analysis based on open-ended answers). The results were then complemented by deductive elements (*i.e.*, theoretical considerations) and led to the development of a quantitative questionnaire that was continuously revised using a combination of inductive and deductive methods for the development of new items and the revision of existing ones. As a result, the CWCBQ can be considered as a promising instrument for the assessment of coping strategies in the context of cyber victimization. However, it is important to note that the current version of the CWCBQ (see the Appendixes) has not yet been tested towards its validity and reliability. Thus, the current CWCBQ represents the result of an extensive process of questionnaire development in which items were partly revised from one version to the other. Nevertheless, the assessment of the construct validity of the CWCBQ among the three countries during Stage 3 represented a very strong and conservative test of the questionnaire's psychometric properties. Not only the configural structure of the questionnaire was tested towards invariance, but also the pattern of the loadings and of the item intercepts. These results show that the six constructs that were assessed with the version of the CWCBQ in Stage 3 were the same in the three countries. Therefore, it would be possible to carry out mean comparisons of these strategies, although this was beyond the scope of the present paper. Unfortunately, this test could not be replicated using the version from Stage 4, as no additional assessments were done among the Swiss and the Irish sample. Further, the results from the Italian sample in Stage 4 represented a strong improvement from Stage 3 to Stage 4, as 11 out of the 15 items that were kept in the analyses in Stage 3 were found to be satisfactory in Stage 4, as well. Moreover, the model fit obtained in Stage 4 was found to be much improved compared to Stage 3. In sum, although the items were slightly changed from one version to the other in order to obtain a more coherent questionnaire in terms of wording,

there was evidence that a core of items exhibited good psychometric characteristics and that an overall improvement in validity and reliability was progressively achieved from one stage to the other.

The coping strategies that were assessed with the CWCBQ referred to a hypothetical cyber victimization scenario. This approach yielded an insight into what the adolescents would do/think if they experienced cyber victimization. Knowledge about coping strategies in hypothetical situations among individuals that never experienced cyber victimization is important, as individuals that do have a repertoire of coping strategies might be those who actually never experience cyber victimization. Considering that cyber victimization represents a very particular form of aggressive behaviour that encompasses power imbalance and repetition [1], it might be that those who know how to cope with situations that might end in cyber victimization might be able to prevent it in the first place. Thus, coping might be a competence that reduces the likelihood of experiencing cyber victimization and, therefore, does not just protect from negative outcomes when cyber victimization has already been experienced. Besides coping with hypothetical cyber victimization, another important insight would be what those adolescents that experienced cyber victimization actually did to cope with it. To this end, the current CWCBQ also includes a question that asks if the scenario that is described in the questionnaire (or a similar one) has ever been experienced. This would make it possible to examine if the CWCBQ is equally well suited to assess coping strategies of both adolescents who did and who did not experience cyber victimization scenarios similar to the one that was described in the questionnaire. Further, assuming that cyber victimization was also assessed in the same study, that there is detailed information on the kind of cyber victimization that was experienced and that the sample is large enough, one might explore what kinds of coping strategies were used in different kinds of cyber victimization. This knowledge would be of high value for prevention and intervention, as different forms of cyber victimization and victimization in general have different degrees of severity [21,48], and it can be assumed that different coping strategies are differentially adaptive depending on the exact circumstances and the available coping resources [23].

Knowledge on the effectiveness of different coping strategies is widely lacking to date, especially with respect to actual cyber victimization. Future research might use the CWCBQ to assess how different coping strategies moderate the impact of cyber victimization on well-being. This research aim can be addressed in different ways. One approach might be to conduct interviews with cyber victims and to focus on how they handled their experience and what they think about how effective their coping strategy was. Similarly, it might be interesting to work with experimental studies using different written scenarios, vignettes, videos or maybe games and accompanying them with questions about potential coping strategies and their expected effectiveness. Another approach might be to examine the longitudinal interplay between cyber victimization, an outcome of interest, and coping strategies, with a focus on the longitudinal moderating role of coping strategies. Finally, besides asking adolescents, it might be insightful to ask parents, teachers and practitioners about their perception of the effectiveness of different coping strategies that adolescents might use in the case of cyber victimization.

4. Conclusions

The current version of the CWCBQ results from an intensive development process and is currently being used in a follow-up study in Italy. Although, it has not been tested towards its psychometric

characteristics so far, the results of the development of the CWCBQ described above suggest that the current version of the CWCBQ is a promising instrument that might be useful for future research and for prevention of and intervention in cybervictimization.

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Author Contributions

Fabio Sticca helped with designing the study in which the CWCBQ was originally developed (netTEEN, Switzerland), organised and performed data assessments in Switzerland and helped develop the German, Italian and English version of the CWCBQ during all stages. He also performed the analyses for the present paper and wrote the main part of the paper. Katja Machmutow developed the original German version of the CWCBQ and was significantly involved in its further development (German and English version) at all stages. She also wrote a significant part of the present paper. Ariane Stauber wrote a significant part of the present paper and helped develop the German and English version of the CWCBQ during the final stages. Sonja Perren designed and supervised the study in which the CWCBQ was originally developed and supervised the work of Fabio Sticca and Katja Machmutow in all aspects. Benedetta E. Palladino organised and performed data assessments in Italy, helped develop the Italian version of the CWCBQ and with writing the present paper. Annalaura Nocentini and Ersilia Menesini designed and supervised the study in which the Italian version of the CWCBQ was used and supervised the work of Benedetta E. Palladino. Lucie Corcoran designed the study that was conducted in Ireland and organised and performed data assessments in Ireland, helped develop the English version of the CWCBQ and with writing the present paper. Conor Mc Guckin supervised the work of Lucie Corcoran in the study in which the English version of the CWCBQ was used.

Appendixes

Appendix 1: Current English Version of the CWCBQ

Sometimes, the Internet or mobiles are used to bully others.

Imagine that for a few weeks, you have been receiving nasty and threatening text messages. Aside from that, you found out that embarrassing pictures of you are being spread around.

Did you ever experience something like that? (Yes/No)

What would you do in this situation? “I would…”

Table A1. Current English version of the Coping with Cyberbullying Questionnaire (CWCBQ).

Item Name	Subscale	Item Label (Response Options: 1 Definitely Not, 2 Probably Not, 3 Probably, 4 Definitely Yes, 5 No Answer)
COCY00	TC	report the incident to the website owner or to the telephone company (e.g., YouTube)
COCY01	DA	go to the police
COCY02	TC	change my contact details (phone number, email address, chat name, profile on social networking sites)
COCY03	HS	be totally desperate
COCY04	RE	write mean and threatening things to the bully
COCY05	AI	avoid any further contact with the bully
COCY06	DA	seek advice on an online platform
COCY07	CS	go to someone who listens to me and comforts me
COCY08	AS	tell the bully to stop it
COCY09	AI	keep out of the bully's way
COCY10	CS	spend time with my friends to take my mind off it
COCY11	HS	think that it is my fault
COCY12	AI	pretend that it does not bother me at all
COCY13	CS	talk to my friends about it
COCY14	HS	accept the situation as it is because there is nothing you can do to stop bullying
COCY15	AS	tell the bully that this is not ok at all
COCY16	DA	inform a teacher or the principal
COCY17	RE	get back at the bully in the real world (offline, e.g., at school)
COCY18	AI	ignore all messages/pictures so that the bully would lose interest
COCY19	HS	ask myself why this is happening exactly to me
COCY20	HS	not know what to do
COCY21	AS	tell the bully that I don't think this is funny at all
COCY22	DA	seek professional advice
COCY23	TC	pay more attention to who has access to my data
COCY24	AS	tell the bully that his behaviour is hurting me
COCY25	RE	get back at the bully personally
COCY26	CS	go to someone who accepts me the way I am
COCY27	TC	block the bully to prevent him from contacting me again
COCY28	RE	get back at the bully together with my friends
COCY29	AI	try not to think about it
COCY30	TC	post less personal information on the Internet
COCY31	DA	call a helpline (e.g. Kids Helpline, CyberBullyHotline)
COCY32	RE	get back at the bully in cyber space (online, e.g., text message, email)
COCY33	AS	ask the bully why he/she is doing this
COCY34	CS	go to someone I can trust
COCY35	TC	save messages/pictures as evidence (e.g., copies or screenshots)

Notes: DA = distal advice; CS = close support; RE = retaliation; AS = assertiveness; AI = active ignoring; HS = helplessness/self-blame; TC = technical coping.

Appendix 2: Current German Version of the CWCBQ

Das Internet oder das Handy werden manchmal benutzt, um andere zu mobben.

Stell dir bitte vor, dass du seit einigen Wochen immer wieder gemeine und bedrohende Nachrichten erhältst. Außerdem hast du erfahren, dass peinliche Bilder über dich verbreitet wurden.

Hast du eine solche Situation schon mal erlebt? (Ja/Nein)

Was würdest du in dieser Situation tun? "Ich würde…"

Table A2. Current German version of the Coping with Cyberbullying Questionnaire (CWCBQ).

Item Name	Subscale	Item Label (Response Options: 1 Sicher Nicht, 2 Eher Nicht, 3 Eher Schon, 4 Sicher, 5 Keine Antwort)
COCY00	TC	den Vorfall bei den Besitzern der Internetseite bzw. bei der Telefongesellschaft melden (z.B. YouTube, Swisscom)
COCY01	DA	zur Polizei gehen
COCY02	TC	meine Kontaktdaten ändern (Telefonnummer, E-Mail, Chatname, Profil bei sozialen Netzwerken)
COCY03	HS	total verzweifelt sein
COCY04	RE	dem Mobber ebenfalls gemeine oder bedrohende Dinge zurückschreiben
COCY05	AI	jeden weiteren Kontakt mit dem Mobber vermeiden
COCY06	DA	in einem Internetforum nach Rat suchen
COCY07	CS	zu jemandem gehen, der mir zuhört und mich tröstet
COCY08	AS	dem Mobber sagen, dass er damit aufhören soll
COCY09	AI	dem Mobber aus dem Weg gehen
COCY10	CS	Zeit mit Freunden verbringen
COCY11	HS	denken, dass ich selbst schuld bin
COCY12	AI	nach außen so tun, als ob mir die ganze Sache nichts ausmacht
COCY13	CS	mit meinen Freunden darüber reden
COCY14	HS	die Sache akzeptieren wie sie ist, denn man kann nichts gegen Mobbing tun
COCY15	AS	dem Mobber sagen, dass das überhaupt nicht ok ist
COCY16	DA	eine Lehrperson oder den Schulleiter informieren
COCY17	RE	mich in der realen Welt am Mobber rächen (offline, z.B. in der Schule)
COCY18	AI	alle Nachrichten/Bilder ignorieren
COCY19	HS	mich fragen, warum das genau mir passiert ist
COCY20	HS	nicht wissen, was ich tun soll
COCY21	AS	dem Mobber sagen, dass ich das gar nicht lustig finde
COCY22	DA	zu einer Beratungsstelle gehen, um mir Rat zu holen
COCY23	TC	besser darauf achten, wer Zugang zu meinen Daten hat
COCY24	AS	dem Mobber sagen, dass mich sein Verhalten verletzt
COCY25	RE	mich persönlich am Mobber rächen
COCY26	CS	zu jemandem gehen, der mich so akzeptiert wie ich bin
COCY27	TC	den Mobber blockieren, sodass er mich nicht mehr kontaktieren kann
COCY28	RE	mich zusammen mit meinen Freunden am Mobber rächen
COCY29	AI	versuchen nicht daran zu denken
COCY30	TC	weniger persönliche Infos ins Internet stellen

Table A2. *Cont.*

Item Name	Subscale	Item Label (Response Options: 1 Sicher Nicht, 2 Eher Nicht, 3 Eher Schon, 4 Sicher, 5 Keine Antwort)
COCY31	DA	bei einer Hilfehotline anrufen (z.B. 147 Pro Juventute)
COCY32	RE	mich in der Cyberwelt am Mobber rächen (online, z.B. SMS/Email)
COCY33	AS	den Mobber fragen, warum er das macht
COCY34	CS	zu jemandem gehen dem ich vertrauen kann
COCY35	TC	Nachrichten/Bilder als Beweismittel speichern (z.B. Kopien, Screenshots)

Notes: DA = distal advice; CS = close support; RE = retaliation; AS = assertiveness; AI = active ignoring; HS = helplessness/self-blame; TC = technical coping.

Appendix 3: Current Italian Version of the CWCBQ

Ogni tanto internet e cellulari sono utilizzati per fare i bulli o i prepotenti.

Immagina che da alcune settimane ricevi continuamente dei messaggi cattivi e minacciosi. Hai anche scoperto che sono state diffuse alcune tue immagini imbarazzanti.

Ti sei già trovato/a in una situazione del genere? (Sì/No)

Cosa faresti in questa situazione? "Io…"

Table A3. Current Italian version of the Coping with Cyberbullying Questionnaire (CWCBQ).

Item Name	Subscale	Item Label (Response Options: 1 Certamente no, 2 Piuttosto no, 3 Piuttosto sì, 4 Certamente sì, 5 Nessuna risposta)
COCY00	TC	comunicherei l'accaduto ai proprietari del sito internet o alla compagnia telefonica (per esempio YouTube)
COCY01	DA	andrei dalla polizia
COCY02	TC	cambierei i miei dati personali (numero di telefono, indirizzo email, nickname in una chat, profilo in un social network)
COCY03	HS	sarei completamente disperato/a
COCY04	RE	manderei a mia volta dei messaggi cattivi e minacciosi al bullo
COCY05	AI	eviterei ogni contatto con il bullo
COCY06	DA	cercherei aiuto online
COCY07	CS	andrei da qualcuno che mi ascolta e mi consola
COCY08	AS	direi al bullo di smettere di farlo
COCY09	AI	starei alla larga dal bullo
COCY10	CS	passerei del tempo con i miei amici in modo da pensare ad altro
COCY11	HS	penserei che é colpa mia
COCY12	AI	farei finta che non mi importa nulla di tutto ciò
COCY13	CS	ne parlerei con gli amici
COCY14	HS	accetterei le cose come sono, perché contro il bullismo non si può fare nulla
COCY15	AS	farei capire al bullo che il suo comportamento non va per niente bene

Table A3. *Cont.*

Item Name	Subscale	Item Label (Response Options: 1 Certamente no, 2 Piuttosto no, 3 Piuttosto sì, 4 Certamente sì, 5 Nessuna risposta)
COCY16	DA	informerei un docente o il preside
COCY17	RE	mi vendicherei nel mondo reale (offline, per esempio a scuola)
COCY18	AI	ignorerei tutti i messaggi e tutte le immagini in modo che il bullo perda interesse nel farlo
COCY19	HS	mi chiederei perché è successo proprio a me
COCY20	HS	non saprei cosa fare
COCY21	AS	direi al bullo che il suo comportamento non é per nulla divertente
COCY22	DA	cercherei consulenza professionale
COCY23	TC	starei più attento/a a chi ha accesso ai miei dati
COCY24	AS	direi al bullo che il suo comportamento mi ferisce
COCY25	RE	mi vendicherei personalmente
COCY26	CS	andrei da qualcuno che mi accetta così come sono
COCY27	TC	bloccherei il bullo in modo che non possa più contattarmi
COCY28	RE	mi vendicherei con l'aiuto dei miei amici
COCY29	AI	cercherei di non pensarci
COCY30	TC	metterei meno informazioni personali su internet
COCY31	DA	chiamerei una linea telefonica d'aiuto (per esempio Telefono Azzurro)
COCY32	RE	mi vendicherei nel mondo virtuale (online, per esempio SMS, email)
COCY33	AS	chiederei al bullo perché lo fa
COCY34	CS	andrei da qualcuno di cui mi posso fidare
COCY35	TC	salverei i messaggi/le immagini come prove dell'accaduto (per esempio ne farei una copia o uno screenshot)

Notes: DA = distal advice; CS = close support; RE = retaliation; AS = assertiveness; AI = active ignoring; HS = helplessness/self-blame; TC = technical coping.

Conflicts of Interest

The authors declare no conflict of interest.

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